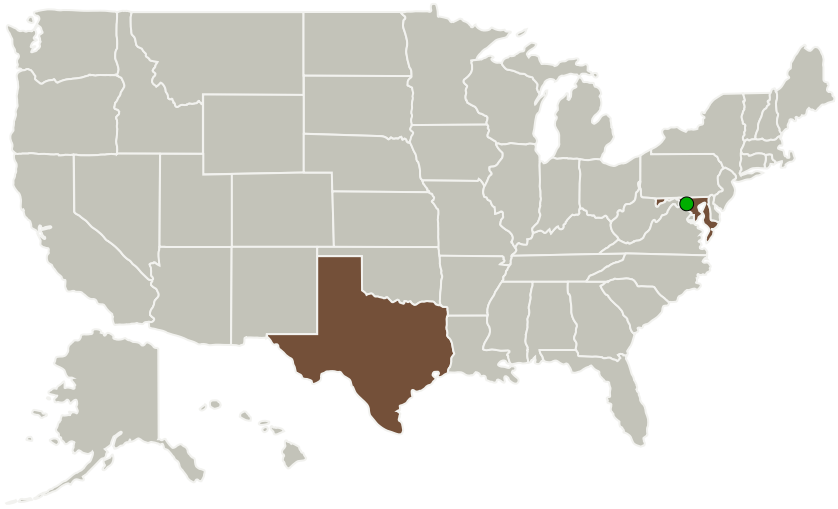
Radiation Hardened ARM Micro Controller Module, Phase I

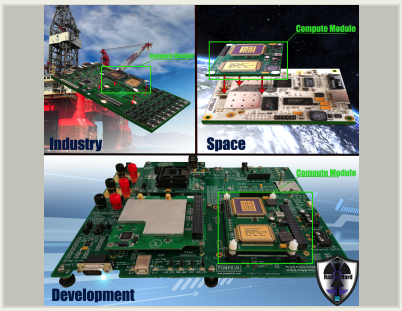
Completed Technology Project (2015 - 2015)

Project Introduction

Every CubeSat design is different with different requirements. However the number of similarities between CubeSat designs is greater than between any two larger spacecraft. Leveraging these similarities and by applying a modular design approach we can develop a small family of motherboards that can fulfill the needs of any CubeSat mission. The computing elements of a 1-3U motherboard and a 6U motherboard are the same. The differences between these CubeSat bus architectures exist outside the computing element. Thus, we can move the computing elements off of the motherboard and into a self-contained Compute Module (CM). The CM contains all the elements needed for a self-contained computer. The CM is attached to an Application Specific Daughter Card (ASDC). Together the CM and ASDC provide the capabilities needed for a specific task. This standard module will consist of a physical form factor, electrical connections and design specifications for the ASDC. The initial Compute Module (CM) design specifications will utilize SST' modified ARM® Cortex®-M0 microcontroller, motherboard for the 1-3U and a 6U CubeSat bus configuration.

Primary U.S. Work Locations and Key Partners





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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
Silicon Space Technology Corporation	Lead Organization	Industry	Austin, Texas
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Texas

Project Transitions

June 2015: Project Start

December 2015: Closed out

Closeout Summary: Radiation Hardened ARM Micro Controller Module, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/139363)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Silicon Space Technology Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

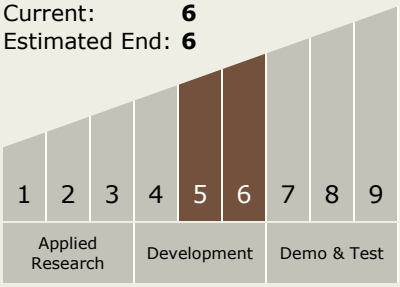
Carlos Torrez

Principal Investigator:

David Gifford

Technology Maturity (TRL)

Start: **5**
Current: **6**
Estimated End: **6**



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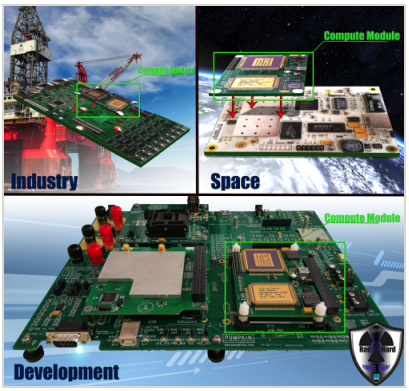
Images



Briefing Chart Image
Radiation Hardened ARM Micro Controller Module, Phase I
(https://techport.nasa.gov/image/126212)

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.1 Avionics Component Technologies
    - TX02.1.6 Radiation Hardened ASIC Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System